Date: Thu, 26 May 94 04:30:22 PDT
From: Ham-Space Mailing List and Newsgroup <ham-space@ucsd.edu>
Errors-To: Ham-Space-Errors@UCSD.Edu
Reply-To: Ham-Space@UCSD.Edu
Precedence: Bulk
Subject: Ham-Space Digest V94 #135
To: Ham-Space

Ham-Space Digest Thu, 26 May 94 Volume 94 : Issue 135

Today's Topics:

Send Replies or notes for publication to: <Ham-Space@UCSD.Edu>
Send subscription requests to: <Ham-Space-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Space Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-space".

Date: 25 May 1994 13:00:04 GMT
From: ihnp4.ucsd.edu!agate!howland.reston.ans.net!noc.near.net!
transfer.stratus.com!hoop.sw.stratus.com!northup@network.ucsd.edu
Subject: Gear for starting satellite station
To: ham-space@ucsd.edu

wk02593@worldlink.com ("Walter K. Daniel KE3HP") writes:
: Here are two approaches for starting a satellite station based on my
: experience of the past few years. Perhaps the most important beginning point
: is reading The Satellite Experimenter's Handbook (TSEH) from the ARRL.
:
:
: 2. Analog (voice and CW) operation
:
: If you are mostly interested in speaking to or exchanging CW with other hams,
: try RS-10 Mode A and/or RS-12 Mode K. For more details, see my article
: "Getting Started with RS-10" in the August 1993 QST or the article by Robert
: Capon WA3ULH "Working Satellite RS-12..." in the February 1994 QST.
:
:

: 73, Walt KE3HP
:

     Thanks for this posting. I was just thinking about trying Satellite
     out and after your post yesterday I went home, found and read the
     Feb. 1994 QST article.

     I was able to find the beacon fine and as it started to get strong
     I looked around the receive band and found someone calling CQ on
     21,230. I set my Tx to 29,430 and tried to respond but wasn't able
     to make contact.

     I had the feeling that I wasn't close enough to the frequency that
     was hearing and that other were so they were able to make a contact
     where I couldn't. Are there any hints or tricks for better choosing
     the Tx frequency ? I'm ready to try again tonight.

     Bill

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--

    Bill Northup   PHONE: (508) 460-2085
    Stratus Computer Inc.   INTERNET: northup@sw.stratus.com
    55 Fairbanks Boulevard   Packet: N1QPR@WA1PHY.#EMS.MA.USA.NA
    Marlboro, MA 01752   Amateur Radio: N1QPR

Date: Wed, 25 May 1994 16:44:47 GMT
From: ihnp4.ucsd.edu!swrinde!cs.utexas.edu!math.ohio-state.edu!magnus.acs.ohio-state.edu!csn!col.hp.com!news.dtc.hp.com!hpscit.sc.hp.com!icon!greg@network.ucsd.edu
Subject: Gear for starting satellite station
To: ham-space@ucsd.edu

Bill Northup (northup@hoop.sw.stratus.com) wrote:
:   I was able to find the beacon fine and as it started to get strong
:   I looked around the receive band and found someone calling CQ on
:   21,230. I set my Tx to 29,430 and tried to respond but wasn't able

Bill,

If you're trying to get into RS-12, the uplink frequency is in the 15 meter band, and the downlink is in the 10 meter band. Looks like you have them switched. I believe the downlink is from 29.410 - 29.450, with the beacon at 29.407. I don't know how you heard the beacon on 15 meters...

The person calling CQ was probably heard on the way up, not down. You could
have worked him simplex, but that wouldn't be as much fun.

The easiest way to "find yourself" is to find an open spot in the downlink
window to park your receiver, then set the transmitter to where it would be
if there wasn't any doppler. If you're, say, 20khz down from the upper
pass band (29.430), set your transmitter 20khz down from whatever the uplink
window is. If I recall correctly, the last two digits in the frequency will
match on the RS satellites. From that point, send a series of dits, say
something, or in some way transmit a recognizable signal and *slowly* move the
transmitter frequency up until you hear your own signal clearly. With RS-12
you shouldn't have to move it very far, a few KHz at most. My passes with
RS-10 usually start at 29.380 downlink and 145.880 uplink (note the matching
80's) and depending on the pass I'll hear myself between 145.882 and 145.885.

Good luck, and enjoy!

Greg KD6KGW

Date: 25 May 1994 18:35:52 GMT
From: ihnp4.ucsd.edu!swrinde!elroy.jpl.nasa.gov!lll-winken.llnl.gov!noc.near.net!
transfer.stratus.com!hoop.sw.stratus.com!northup@network.ucsd.edu
Subject: Gear for starting satellite station
To: ham-space@ucsd.edu

greg@core.rose.hp.com (Greg Dolkas) writes:
: Bill Northup (northup@hoop.sw.stratus.com) wrote:
: : I was able to find the beacon fine and as it started to get strong
: : I looked around the receive band and found someone calling CQ on
: : 21,230. I set my Tx to 29,430 and tried to respond but wasn't able
:
: Bill,
:
: If you're trying to get into RS-12, the uplink frequency is in the 15 meter
: band, and the downlink is in the 10 meter band. Looks like you have them
: switched. I believe the downlink is from 29.410 - 29.450, with the beacon
: at 29.407. I don't know how you heard the beacon on 15 meters...
: The person calling CQ was probably heard on the way up, not down. You could
: have worked him simplex, but that wouldn't be as much fun.
:
I did have the uplink and downlink frequencies right on the radio (I was
double checking everything)- is just my fingers that couldn't get them right
when I was typing.

: The easiest way to "find yourself" is to find an open spot in the downlink
: window to park your receiver, then set the transmitter to where it would be

: if there wasn't any doppler. If you're, say, 20khz down from the upper
: pass band (29.430), set your transmitter 20khz down from whatever the uplink
: window is. If I recall correctly, the last two digits in the frequency will
: match on the RS satellites. From that point, send a series of dits, say
: something, or in some way transmit a recognizable signal and *slowly* move the
: *transmitter* frequency up until you hear your own signal clearly. With RS-12
: you shouldn't have to move it very far, a few KHz at most. My passes with
: RS-10 usually start at 29.380 downlink and 145.880 uplink (note the matching
: 80's) and depending on the pass I'll hear myself between 145.882 and 145.885.
:
: Good luck, and enjoy!
:
: Greg KD6KGW

Thanks for the information - I will be back trying again tonight.

     Bill

--
--

    Bill Northup   PHONE: (508) 460-2085
    Stratus Computer Inc.   INTERNET: northup@sw.stratus.com
    55 Fairbanks Boulevard   Packet: N1QPR@WA1PHY.#EMS.MA.USA.NA
    Marlboro, MA 01752   Amateur Radio: N1QPR

Date: Wed, 25 May 1994 09:07:13 GMT
From: ihnp4.ucsd.edu!swrinde!emory!rsiatl!ke4zv!gary@network.ucsd.edu
Subject: Interested in starting w/ Sat
To: ham-space@ucsd.edu

In article <2rtq62$lnr@pipeline.com> blaknite@pipeline.com (Noah Lehmann-Haupt)
writes:
>1. What rig should I look into getting? I'm thinking about
>the new Icom all-mode 2m/440 (Can't remember model #...it was
>in the latest QST) Any hints?

Well, it's brand new, so there's no history on it yet. The rig
most frequently heard on the satellites is the Yaesu FT736R and
it's older cousin the FT726R. Those are followed by the fancy
IC970 and the Icom separates, IC275 and IC475. The newest Icom
rig *looks* promising, but we don't know how well it actually
works yet. If you get one, let us know. :-)

(The one rig I'd steer you *away* from is the Kenwood 790. It
can work, but it's an ergometric nightmare. The thermal design

of the radio is also bad. It gets real hot real quick because
the output bricks aren't well designed or matched. If you operate
it throttled way back to drive external amps, it may do OK.)

>2. Antenna wise, any ideas? I have a tri-band Yagi on the
>roof now on a regular mid-sized rotor. I was thinking about
>getting so moderate sized 2m/440 yagis, but what kind? Should
>I invest in an alt/az rotor...that is a big investment in both
>time and money, since I'd have to put another tower up on the
>roof...What kind of antennas should I look for?

Alt-Az rotators are a must for serious satellite work. You can
save some money by buying only a KR-500 elevation rotator and
mounting it just above your tri-bander at *right angles* to the
tri-bander's boom. This will allow the VHF/UHF beams to elevate
with their rear sections coming down *between* the tri-bander's
elements. Just remember that your azimuth rotator is 90 degrees
off when using the satellite beams. (You'll get less than 90
degrees elevation using this method before the VHF/UHF beams hit
the boom, but that's workable.) It's better to have fully dedicated
alt-az rotators free of HF beam interference, especially if you're
considering auto-tracking. But, of course, that costs more money
and means some re-engineering of the tower mechanics. IE you can
use a tall enough mast to put the beams high enough above the
tri-bander to allow full motion, but that makes them much more
susceptable to wind damage.

Better is to re-install the tri-bander down the tower a bit using
a Ring-rotor to walk the beam *around* the tower. Or you can use a
separate tower. Remember, your antennas spend most of their time
looking up, so a tall tower isn't essential. All you really need
is a mast tall enough to allow the antenna's rear elements to clear
the ground when at 90 degrees elevation. A taller tower can be helpful
when the satellite is near the horizon and you have local obstructions
to clear.

As to which beams, the KLMs are by far the favorites. The KLM22C
and KLM40CX are preferred. Use good mast mounted preamps. It's
usually best to use a very low loss transmit coax and a separate
receive coax with switching on the tower. Thanks to the preamp,
the receive coax doesn't have to be anything special. Doing it
this way, you're less likely to burn up a preamp if you transmit
a blip of RF at the wrong time.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary

534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

Date: Wed, 25 May 1994 18:22:04 GMT
From: pa.dec.com!src.dec.com!crl.dec.com!nntpd.lkg.dec.com!nntpd2.cxo.dec.com!specxn.enet.dec.com!bonomo@decwrl.dec.com
Subject: Motorola GPS engine purchase information
To: ham-space@ucsd.edu

Greetings, one and all!

This message is ASCII text, formatted as <CR> at =<78 characters, tabs at +8.

Have finally received "everything" which I will obtain from Motorola and Trimble, and the order requests have dwindled to a minimum, I have attached the specifications and pricing below.

In a nutshell, the Motorola unit is better in every way, excepting three factors. The Trimble unit:

1) is about 1/8" smaller in width and height,
2) is about .6 ounce lighter,
3) consumes less power in standby, quoted as ~2uA nominal, versus the Motorola's stated maximum of 60uA.

Other than that, the Motorola VP Oncore engine is superior in all ways, including price. The recommendation, from my perspective, is to choose the Motorola unit, but your choice may vary. The above factors, in which the Trimble unit is superior, may be significant ones for you.

I have had requests from 375 individuals, from nine countries, for over 435 units. All this is, of course, based on a "$150" purchase price, which is not available.

Understanding this, it seems best if there is a "standard" configuration which is ordered, as the pricing given is for quantities of 100 and greater. If 100+ want the options, we'll order those, too. Remember, all prices are for 100+ units per item. In other words, if 25 units are wanted with the LNA option, the pricing for that LNA option will be be somewhat higher than the figure quoted below, and I'm not sure if Motorola can (or will) handle one-sie, two-sies and get it right.

****
The recommended "standard" configuration:

Item	Price / each (includes Colorado State sales tax)
VP Oncore engine	$268
Active Antenna	$ 70
Cable to antenna	$ 22
Total "standard"	$360

****

Options to be considered:

LNA	$ 16
battery	$ 11

Shipping within the continental U.S., via 2nd day service, will run $10. This includes a box, packing foam and shipping charges. This figure is good for up to ten units.

Those interested in this group purchase should remit monies to the name and address below. Please send non-cash such as personal checks, money orders or the like, as it allows records to be kept much more easily. If less than 100 orders are placed, the checks/money orders will be destroyed, rather than incurring the cost of returning up to 100 of them. Alternately, if you want your check returned in the event of an insufficient number of units ordered, add a dollar bill to cover the cost of an envelope, stamp and my or my wife's writer's cramp which will inevitably result. If the order threshold is reached and an order is placed with Motorola, the $1 will be returned to you with your order. Please include a very complete address to which the order may be sent. Include your current Internet address and telephone number(s) where you may be reached, as well. I've experienced several Inet addresses which have bounced, by the way, so if you didn't receive a response from me directly, it was attempted.

Send orders to:

Thomas A. Bonomo
8147D Summerset Drive
Colorado Springs, Co. 80920.6123

I can be reached, and have been by several individuals, at:

Telephone: (719)593.9883 Home (evenings, weekends)
(719)592.5105 Office (weekdays)
Internet: tom.bonomo@cxo.mts.dec.com

This message will be posted to the newsgroups, as well.

Thanks for your patience as I've gathered information and responded to each of your requests.

Regards,

Tommy

Specifications and pricing information follows.

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Motorola VP ONCORE SPECIFICATION DATA SHEET

Receiver Architecture

- 6 channel
- L1 1575.42 MHz
- C/A code (1.023 Mhz chip rate)
- Code plus carrier tracking (carrier aided tracking)

Tracking Capability

- 6 satellite vehicles simultaneously

Dynamics

- Velocity: 1000 m/s when altitude less than 18 km
- Altitude: 18 km for velocities greater than 514 m/s
- Accelleration: 4 g

Antenna

- accepts active and passive antennas

Acquisition Time

(TTFF = Time To First Fix)
- 22 sec. typical TTFF (with current almanac, position, time and

ephemeris)
- 48 sec. typical TTFF (with current almanac, position and time)
- 2.5 seconds typical re-acquire

Accuracy

- Position: less than 25 meters, SEP (without SA).
  DoD may invoke Selective Availability (SA), potentially
  degrading accuracy to 100 meters (2 dRMS)

DATUMs

- 49 std. datums, 2 user defined, default WGS-84

Signal Level

- TTL

Output Messages

- Latitude, longitude, height, velocity, heading, satellite
  tracking status (Motorola Binary Protocol)
- NMEA-0183 Version 2.00 (GGA, RMC, GLL, GSA)
- LORAN emulation mode
- Software selectable

Operating voltage

- 4.75 - 5.25 VDC, 50 mVp-p ripple

Operating current

- 230 mA typical @5V, 275 mA max at 5.25V

Standby voltage

- 2.5 - 5.0 VDC

Standby current

- 60 ua max

Dimensions

- 2.00" x 3.25" x .64" (50.80mm x 82.55mm x 16.26mm)

Weight

- 1.9 oz. (53.9g)

Connectors

- Digital: 10 pin (2 x 5) header on .100" centers
- RF: right angle OSX (sub-miniature snap-on)

Operating Temperature

- -30 - +85 degrees C (without on-board battery)
- -20 - +60 degrees C (with on-board battery)

Storage Temperature

- -30 - +85 degrees C (without on-board battery)
- -20 - +60 degrees C (with on-board battery)

Humidity

- 95% RH, non-condensing

Vibration

- 7.7 g, random (survivability)

MTBF

- >61,000 hours (estimated)

Optional features

- Lithium battery
- Low Noise Amplifier
- Real Time Clock

Pricing (includes Colorado state sales tax)

VP Oncore engine	$268
Active Antenna	$ 70
Cable to antenna	$ 22
Low Noise Amp	$ 16
Lithium Battery	$ 11

Development Software
- 1st option $270

includes:
Raw code phase,
disc data,
smooth sat time,
carrier phase

2nd option $215
includes:
above without
carrier phase

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Specifications for Trimble SVeeSix GPS engine

Model: SVeeSix-CM2

General

L1 Frequency, C/A code (SPS), 6 channel, continuous tracking receiver

Update Rate

NMEA - 1Hz

Accuracy

Position: 25m without SA
Velocity: 0.1m/s without SA
Time: 1 us (nom)

DGPS Accuracy

Position:	2m to 5m (2 sigma)
Velocity:	0.1m/s
Time:	1 us (nom)

Acquisition (typ)

Cold Start:	2 to 5 minutes
Warm Start:	50 sec with time upload
Hot start:	30 sec with time upload

Reaquisition

<2 sec

Dynamics

Velocity:	500 m/sec max
Acceleration:	4g
Jerk:	20m/sec^3

Environmental Specs.

Operating temp:	-10C to +60C
Storage temp:	-55C to +100C
Vibration:	0.008g^2/Hz 5Hz to 20Hz
	0.05g^2/Hz 20Hz to 100Hz
	-3dB/octave 100Hz to 900Hz
Operating Humidity:	5% to 95% RH non-condensing @+60C
Altitude:	-400m to +18000m

Physical Characteristics

Dimensions:	3.25" x 1.83" x 0.58"
Weight:	1.3 oz. (36.4g)
Connectors:	RF: SMB, I/O: 8 pin (2x4), 2mm header

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Technical Specifications
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     Prime power:       +5Vdc (-3% to +5%)
     Power consumption: 280 ma, 1.40 watts
     Backup power:      +3 to +5 Vdc
     Backup consumption:    1 uA @3V and +25C (nom)
     Serial port/1PPS:  CMOS TTL
     Protocol options:  TSIP @9600 baud, 8-O-1
                   NMEA 0183 v2.0 @4800 baud, 8-N-1
                   TAIP @4800 baud, 8-N-1

     NMEA messages:          Standard: GGA,VTG
                   Optional: GGA,GLL,VTG,ZDA,GSA,GSV,RMC



Pricing (includes Colorado state tax)
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     SVeeSix CM2, DGPS capable   $321
     Antenna  (includes cable)   $118


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End of Ham-Space Digest V94 #135
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